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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,683	03/04/2002	Hiroaki Matsuda	220228US0	2827

22850 7590 12/06/2005

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EXAMINER	
RODEE, CHRISTOPHER D	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,683	MATSUDA ET AL.	
	Examiner	Art Unit	
	Christopher RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,11,13-15,19 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,11,13-15,19 and 20* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed after final on 9 November 2005 has been entered. The claims pending in the application are free of the previously presented art rejections. The indicated allowability of claims 1-3, 5, 6, 11, 13-15, 19, and 20 is withdrawn in view of the newly discovered reference(s) to Saitoh *et al.* in US Patent 5,496,673 and Tamamura *et al.* in US Patent 4,426,247. Rejections based on the newly cited reference(s) follow. The Finality of the Office action dated 9 March 2005 is withdrawn and prosecution on the merits resumes.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5, 6, 11, 13-15, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saitoh *et al.* in US Patent 5,496,673 in view of Tamamura *et al.* in US Patent 4,426,247, and further in view of Chowdry *et al.* in US Patent 5,102,767.

Saitoh discloses a carrier particle having a preferred core size of 30 to 100 μm (col. 3, l. 6-11) coated with a resin layer comprising a silicone resin (see Example 1). The silicone resin in Example 1 is SR 2410 from Toray Silicone, which is identified by Tamamura as a crosslinked silicone resin (col. 10, l. 28-29). Carbon black having a diameter of 16 nm or less (Abstract), 13 nm in Example 1, is bonded to the surface of the silicone coating. Because the carbon black is bonded to the resin layer it is considered by the Examiner to be part of the resin layer. The core of the carrier provides a saturated magnetization of 60 to 210 emu/g (col. 3, l. 9-11). "Saturated

magnetization" appears to be the same as the "induced magnetic moment" of the instant claims because the saturated magnetization is obtained under an applied magnetic field. The carrier is combined with a toner (col. 2, l. 65-col. 3, l. 2; col. 8, l. 33-58), which has a thermoplastic binder resin (e.g., styrene-n-butyl methacrylate) and carbon black. The carrier has an exemplified size of 70 μm in Example 1.

The reference does not identically disclose the claimed size for the carrier and does not specifically disclose the size characteristics of instant claims 2, 3, and 11. The reference also does not disclose the toner size of instant claim 19, but Chowdry teaches that improved resolution of toner images is achieved when the toner size is made small, such as 8 μm or less (col. 3, l. 29-35; col. 5, l. 29-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the carrier core of Saitoh with a size within the disclosure of the reference, such as 50 μm, because the reference teaches that sizes between 30 and 100 μm are effective and the reference exemplifies a size near the middle of this range (i.e., 70 μm) as particularly effective. The artisan would optimize the average size of the carrier core within the disclosed range and use the specifically disclosed size as a starting point for further optimization. Because a value of 50 μm is near the exemplified size and well within the disclosed range this size would have been obvious to the skilled artisan. The artisan would also have optimized the size near the disclosed average size in order to ensure most particles have the desired size. This concept is seen as being presented in dependent claims 2, 3, and 11 because the artisan would have found it obvious to minimize the number of particles far from the average size as there is no apparent benefit in having a large number of particles far from the average. It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the toner of Saitoh with a small particle size, such as below the

exemplified average size of 10 μm (col. 8, l. 42), because this permits the artisan to produce more detailed images due to the smaller toner size.

Claims 2, 3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saitoh *et al.* in US Patent 5,496,673 in view of Tamamura *et al.* in US Patent 4,426,247 as applied to claims 1-3, 5, 6, 11, 13-15, 19, and 20 above, and further in view of Shintani *et al.* in US Patent 5,204,204.

Saitoh and Tamamura were discussed above. The references do not specifically disclose the particle size distribution characteristics of the carrier of claims 2, 3, and 11. However, Shintani teaches that it is advantageous to minimize the particle size distribution of resin coated carrier particles. Specifically, Shintani teaches carriers having average particle sizes of from 40 to 60 μm, less than 10 volume % of particles having a size below 31 μm, and a bulk density 2.45 to 2.65 g/cc (col. 3, l. 54-56; col. 6, l. 66 - col. 7, l. 2). These characteristics minimize the formation of aggregates having a size of 62 μm or greater (col. 7, l. 3-23) and reduce carrier fogging, adhesion of the carrier to the surface of the photoconductor, and character voids (col. 7, l. 3-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the carrier of the primary reference with a narrow particle size distribution because Shintani states that narrow particle size distributions improve fogging characteristics, reduce carrier adhesion to the surface of the photoconductor, and reduce carrier voids. Specifically, Shintani teaches that less than 10 volume % of carrier particles having a size below 31 μm give the results describes. This clearly suggests that the number of particles smaller than 31 μm as well as smaller than the average size of 40 to 60 microns should be minimized.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
1 December 2005